

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : FUJI PHOTO FILM CO LTD

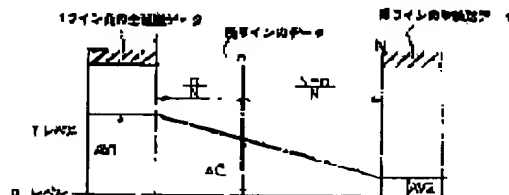
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(72)Inventor : SUGANUMA ATSUSHI

(54) OFFSET LEVEL CORRECTION METHOD FOR LINEAR IMAGE SENSOR AND DEVICE THEREFOR**(57)Abstract:**

PROBLEM TO BE SOLVED: To correct the fluctuation of an offset level at the time of reading an original whose periphery is solid and center part is provided with a void by an image sensor.

SOLUTION: At the time of correcting the offset level of the output signals of the respective picture elements of the image sensor for which transfer parts are arrayed along a linear light receiving part, at the time of outputting picture element signals through the transfer parts to the outside, after the transfer of the picture element signals for one line, transfer clocks are supplied further and the level of the emptied transfer part is outputted as an empty transfer level. At the time of obtaining a correction amount ΔC for the respective picture elements of a certain line, a difference for which the empty transfer level AV1 of one line before is subtracted from the averaged empty transfer level (average value) AV2 of the certain line is obtained, then the proportional distribution amount to the entire picture element number N of the difference from a first picture element to an (n)-th picture element to be corrected is obtained and a value for which the proportional distribution amount is added to the empty transfer level of one line before is turned to the correction amount. The correction amount ΔC is turned to $\Delta C = AV1 + (AV2 - AV1) \times (n)/N$. Thus, since correction is performed by the empty transfer levels of before and after, the appropriate correction is performed.

**LEGAL STATUS**

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Counterpart of Reference 4 (JP-A-H09-298647)



US005940125A

United States Patent [19]
Suganuma

[11] **Patent Number:** **5,940,125**[45] **Date of Patent:** **Aug. 17, 1999**

[54] **CORRECTING OFFSET LEVEL USING A PROPORTIONAL DISTRIBUTION OF A DIFFERENCE IN DARK CURRENT LEVELS IN A LINE IMAGE SENSOR**

5,376,966 12/1994 Takase 348/243

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[57] **ABSTRACT**[21] **Appl. No.:** 08/848,638[22] **Filed:** Apr. 29, 1997[30] **Foreign Application Priority Data**

May 1, 1996 [JP] Japan 8-111013

[51] **Int. Cl.⁶** H04N 9/64[52] **U.S. Cl.** 348/243

[58] **Field of Search** 348/241, 243,
 348/282, 283, 250, 311, 315, 322, 323,
 324; 358/463

[56] **References Cited****U.S. PATENT DOCUMENTS**

3,904,818 9/1975 Kovac 348/243

5,181,118 1/1993 Kimura 348/243

5,272,536 12/1993 Sudo et al. 348/243

An offset level of a pixel signal outputted from a linear image sensor having a pixel transfer array disposed along a photodetector is corrected by outputting an empty transfer levels signal levels produced from empty pixel transfer array elements when transfer clock pulses are successively applied to the pixel transfer array after one line of pixel signals is transferred from the photodetector through the pixel transfer array. To determine a correcting quantity of a given pixel of a predetermined line, a difference is produced by subtracting an average empty transfer level of a line preceding the predetermined line from an average empty transfer level of the predetermined line. A proportional distribution of the difference from a first pixel to an nth pixel to be corrected with respect all pixels of the predetermined line is determined. The proportional distribution is added to the empty transfer level of the line preceding the predetermined line. Since the average empty transfer levels of the predetermined line and the preceding line are used, the offset level can accurately be corrected.

16 Claims, 11 Drawing Sheets

